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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,571	10/16/2003	Tatsuya Suzuki	8070-1003	7159

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EXAMINER	
LINDSAY JR, WALTER LEE	
ART UNIT	**PAPER NUMBER**
2812	

DATE MAILED: 09/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/685,571	SUZUKI ET AL.	
	Examiner	Art Unit	
	Walter L. Lindsay, Jr.	2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *6,13,19,24 and 31-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6,13,19,24 and 33* is/are rejected.

7)☒ Claim(s) *31 and 32* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to an Amendment filed on 7/11/2005.

Currently, claims 6, 13, 19, 24 and 31-33 are pending.

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 6, 13, 19, 24 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hugo et al. (U.S. Patent No. 6,300,202 filed on 10/9/2001) in view of Christenson et al. (U.S. Patent No. 6,835,667 filed 6/14/2002).

Hugo show the method substantially as claimed in Figs. 1-4 and corresponding text as: forming an insulating film (101) on a semiconductor substrate (100), said insulating film comprising at least a high-k insulating film that has higher dielectric constant than that of the silicon oxide film (col. 2, line 48- col. 3, lines 17); and selectively removing said insulating film via wet etching to partially expose said surface of said semiconductor substrate (col. 5, lines 13-43) (claim 6).

Hugo lacks anticipation only in not explicitly teaching that: 1) selectively removing said insulating film via a wet etching with a chemical solution containing an organic solvent as a main component to partially expose said surface of said semiconductor substrate (claim 6); 2) the organic solvent is a solvent having polar group (claim 13); 3) the organic solvent is selected from the group consisting of: isopropyl alcohol; ethylene glycol; 2-heptanone; cyclopentanone; methylethyl ketone; glycol ether; propyleneglycol monomethyl ether; and propyleneglycol monomethyl acetate (claim 19); 4) the organic solvent is isopropyl alcohol, and said chemical solution contains not less than 90 % vol. of isopropyl alcohol (claim 24); and after said selectively removing said insulating film via a wet etching, rinsing the surface of said semiconductor substrate with an organic solvent, wherein said selectively removing said insulating film via a wet etching, said chemical solution includes a fluoride-containing compound (claim 33).

Christenson teaches the etching of High-K films. The High-K film can be etched selectively with an organic mixture that can consist of Isopropyl alcohol (col. 2, lines 49-58). This aids in the reduction of HF used in order to etch High-K dielectrics.

It would be obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method of Hugo by removing the insulating film with an organic solvent, which has a polar group and consist of an organic solvent from the group of: isopropyl alcohol; ethylene glycol; 2-heptanone; cyclopentanone; methylethyl ketone; glycol ether; propyleneglycol monomethyl ether; and propyleneglycol monomethyl acetate, and that the solvent contains no less than 90% vol. isopropyl alcohol as taught by Christenson, with the motivation that Christenson teaches that the addition of an organic solvent reduces the amount of HF used to etch High-K dielectrics.

Allowable Subject Matter

5. Claims 31 and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter L. Lindsay, Jr. whose telephone number is (571) 272-1674. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael S. Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Walter L. Lindsay, Jr.
Examiner
Art Unit 2812

WLL
September 20, 2005